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RAILROAD ROUTES IN ALASKA

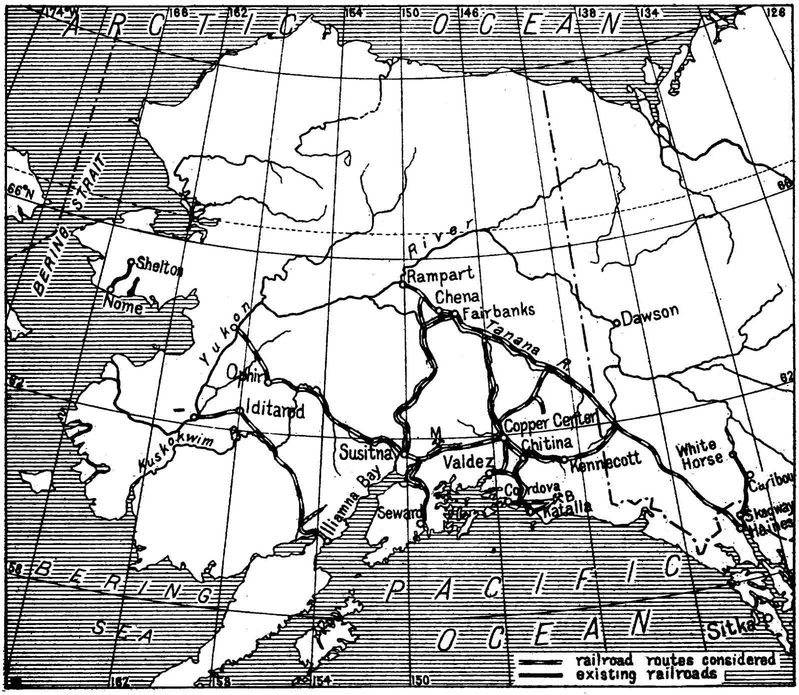
The report of the Alaska Railroad Commission, published as House Document No. 1346, 1913, supplies trustworthy knowledge of the actual conditions and resources that have to do with the possibility of railroad development in the Territory. The Commission, appointed by President Taft by authority of an act of Congress approved on Aug. 24, 1912, consisted of Major Jay J. Morrow, Corps of Engineers, U. S. A., Chairman; Alfred H. Brooks, geologist in charge of Division of Alaska Mineral Resources, Geological Survey, Vice-Chairman; Civil Engineer Leonard M. Cox, U. S. Navy, and Colin M. Ingersoll, consulting railroad engineer, New York City. Its main object was to examine and report on the most advisable railroad routes in the Territory.

Railroad construction in Alaska depends upon the resources of the Territory, the possibility of settlement and the topography of the country. The existence of large undeveloped mineral resources as well as extensive tracts of agricultural and grazing lands is now a matter of common knowledge. It has also been shown that climatic conditions throughout the larger part of the Territory permit settlement. The possibility of utilizing the natural resources distributed in the economic districts by means of railroads connecting tidewater with the well-developed Alaskan river systems was likewise recognized. The 5,000 miles of navigable waters of the Yukon and Kuskokwim rivers, in particular, drain a large inland basin which might be advantageously penetrated by means of a line from southern Alaska.

From the standpoint of human settlement the Territory may be divided into a northern and southern region, which are fairly accurately delimited by the Arctic Circle. The popular conception of bleakness and of frozen solitude belongs, properly speaking, only to the region north of the Endicott Range, which is north of the Arctic Circle. The southern region is quite susceptible of becoming a profitable field for human activity.

Alaska's southern coast is separated from the central districts by the Pacific coastal ranges which front the sea in the shape of a large arc extending from British Columbia to the end of the Alaskan Peninsula. The system attains a maximum width of 200 miles north of Prince William Sound. Access to the two great inland valleys of the Yukon and the Kuskokwim is, therefore, gained with difficulty along the few passes leading north and northwest from the ocean.

Transportation of ocean-borne goods up the Yukon and Kuskokwim is limited to three or three and a half summer months. The climatic conditions, therefore, constitute a serious drawback to commerce depending on the navigability of these water courses. Moreover both flow into Bering Sea and their mouths lie some 2,500 miles distant from Puget Sound. The approach to both rivers is difficult. That of the Yukon is a shifting channel of little depth across mud flats. The entrance of the Kuskokwim is very tortuous. Nevertheless the river system constitutes at present the best developed transportation route. The Yukon is navigable throughout central Alaska and beyond the Canadian frontier as far as White Horse, a distance of 2,200 miles. Its tributary, the Tanana, is navigable as far as Chena, near Fairbanks. The lesser



Railroad Routes in Alaska. Scale, 1 : 19,000,000.

valleys of the Copper and Susitna are also navigable. The importance of these two valleys however consists in thus providing suitable grades for tracks leading to the regions north of the mountainous barrier overhanging the southern coast.

Five natural passages lead from the ice-free ports to the valleys north of this rocky barrier. The most westerly of these routes is based upon Pyramid Harbor, an arm of Lynn Canal, or Haines, a bay on the west side of Lynn Canal. The road follows the valley of the Chilkat River and extends into a series of natural depressions paralleling the inland front of the St. Elias Range. Thence it would follow, if built, the broad flat divide between the White and Tanana basins to attain Fairbanks. This is the longest of the routes considered.

Another available pass is based on Yakutat Bay. The road would run southeasterly for about 50 miles to the mouth of the Alsek River and ascend the Alsek Valley, where a junction with the Pyramid Harbor-Tanana route may be effected at about 700 miles from the coast. In point of natural resources, harbor conveniences or topographic obstacles to construction, this road cannot stand comparison with the first.

Farther west, the next route of access to the interior is afforded by the great Copper River Valley. Here three general routes can be utilized. One from Cordova or Katalla directly up the river; a second from Valdez across Marshall Pass and down the Tasnuna to the Copper River Valley; a third from Valdez over Thompson Pass to the Copper River at a point near Copper Center. All three follow practically the same line from Copper Center up the Gulkana River and one of its tributaries across the divide to the headwaters of the Delta River and down that stream and the Tanana River to Fairbanks.

A fourth line can be run northward from Seward, in Resurrection Bay. A road has already been begun at this point and extends as far as Turnagain Arm, a branch of Cook Inlet. This road can be prolonged to the Copper River plateau by following up Knik Arm and the Matanuska Valley over Tahneta Pass at an elevation of about 3,000 feet and so reach the Copper River at a point near Copper Center. The Tanana River Valley could be reached by the extension of the line or by the Susitna River. The advantage of this road lies in the promise of connection with the great Kuskokwim Basin through one of the passes leading from the headwaters of the Yentna, a tributary of the Susitna.

A westernmost line could have a terminal point at Iliamna Bay and extend thence into the Kuskokwim, and from that valley it might be made to attain the lower Yukon, from which it is separated only by a low watershed.

On the basis of physical and economic considerations the Commission finds that the most favorable system may be provided by the construction of two independent roads that may later be connected or extended according to new requirements. One of these lines should connect the valley of the Yukon and its tributary, the Tanana, with tidewater, while the other should be devoted to the development and needs of the Kuskokwim and the Susitna.

In the opinion of the Commission the best route for the first system is that which leads from Cordova by way of Chitina to Fairbanks. The Bering coal field should be connected with the system, *via* Lake Charlotte, by a branch 38 miles long. The reasons why the best trunk line would thus be supplied to the Yukon and Tanana rivers are that Cordova can be made into an excellent harbor, that it is the best ocean terminal for the Bering River coal, that the route is the shortest and finally that the easier grades over it would result in the lowest freight rates into the Tanana Valley. A railroad from Chitina to Fairbanks, it is estimated, will be 313 miles long.

The second system should lead from Seward around Cook Inlet to the Iditarod. It should be connected with the Matanuska coal field. It is pointed out that it would not be economical to haul the output of this district to Valdez or Cordova and that the field's logical outlet is, therefore, Seward. This route is deemed to be as imperative as the first, because the latter fails to provide access to either the Matanuska coal field, the fertile land and mineral wealth of the lower Susitna or the great Kuskokwim Basin.

The route from one of the harbors on Cook Inlet into the valley of the Kuskokwim was also considered. No railroad based on any of them will assist in the development of the Territory so efficiently and economically as can be done by lines reaching the coast farther north or east. The Commission says, however, that Iliamna Bay or Iniskin Bay have possibilities as a terminal for a short line intended to develop the resources and industries of the immediately tributary region.

The railroads thus recommended will involve 733 miles of new construction at a cost of $35,000,000. It is expected that sooner or later both systems will be tied together by several local branch lines and that the same network will eventually reach every valuable portion of the Territory.[1]

MEDICAL SCIENCE AND THE TROPICS

Sir Ronald Ross, to whom it is due, perhaps, more than to any other man that the fame of British tropical schools and of British discoveries in tropical medicine has spread over the world, read a paper with this title at the meeting of the Royal Colonial Institute in London on Jan. 14 last. The paper appears in *United Empire* (Feb., 1913, pp. 120–131) and from it are condensed here some of the statements of this distinguished physician.

Sir Ronald Ross said that those who have not been in tropical countries can scarcely conceive the former conditions of life of the poorer Europeans there, nor imagine what the first pioneers must have suffered. With only poor huts to live in, nothing but the poorest food to eat and surrounded by innumerable insect-carriers of infection, they lived a most dangerous life. The risks of death from tropical diseases were immense. Whole regiments used to be wiped out by yellow fever in the West Indies and by cholera in India. No young man visiting tropical America or Africa could be reasonably certain of life. But European settlements did endure though they were only poor and ramshackle affairs. Vast areas, however, remained almost untouched except by occasional explor-

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[1] The following table is taken from the Commission's Report and gives in concise form the data as to mileage, terminals and gauge of existing railroads in Alaska:

Southeastern Alaska:	
White Pass and Yukon route, Skagway to White Pass (narrow gauge). Terminal at White Horse, Yukon Territory—total mileage, 102 miles	20.4
Yakutat Southern Railroad, Yakutat to Situk River (narrow gauge)	9.0
Copper River: Copper River & Northwestern Railroad, Cordova to Kennicott (standard gauge)	195.0
(The same company has built a few miles of track at Katalla, where the Alaska Pacific Railroad & Terminal Co. has also done some work. At Valdez a few miles of track of the Alaska Home Railroad were laid in 1907, and some work was previously done on the Copper River & Northwestern Railway and on the Valdez & Yukon Railroad.)	
Kenai Peninsula: Alaska Northern Railroad, Seward to a point near head of Turnagain Arm (standard gauge)	71.6
Yukon Basin: Tanana Valley Railroad, Fairbanks and Chena to Chatanika (narrow gauge).	46.0
Seward Peninsula:	
Seward Peninsula Railroad, Nome to Shelton (narrow gauge)	80.0
Paystreak Branch, Seward Peninsula Railroad (narrow gauge)	6.5
Council City & Solomon River Railroad, Council City to Penelope Creek (standard gauge)	32.5
Wild Goose Railroad, Council to Ophir Creek (narrow gauge)	5.0
	466.0